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Claims

[c1] 1. A system for balancing a CT gantry mechanism having a stationary base member and a rotating base member, the rotating base member having an x-ray tube and detector plate positioned thereon,
a first weight stack mechanism having a first known plurality of weight members and spacers,
a second weight stack mechanism having a second known plurality of weight members and spacers,
said first and second stack members being positioned on said rotating base member at a pre-selected positions, and
a pair of strain gage sensors positioned on said stationary base member adjacent said rotating base member.

[c2] 2. The system as described in claim 1 wherein said spacers comprise individual spacer members and individual shim members.

[c3] 3. The system as described in claim 1 wherein said weight members comprise a first set of individual weight members having a first mass and a second set of individual weight members having a second mass different from said first mass.

[c4] 4. The system as described in claim 1 wherein said pre-selection positions are approximately 90°apart.

[c5] 5. The system as described in claim 1 wherein said pre-selection positions are situated at the approximately 107°and 180°positions on said rotating base member.

[c6] 6. The system as described in claim 1 wherein said strain gage sensors are made from a piezoceramic material.

[c7] 7. A system as described in claim 1 wherein said pair of strain gage sensors comprise a first strain gage sensor to sense strain in the X-direction and a second strain gage sensor to sense strain in the Z-direction.

[c8] 8. A method for balancing a CT gantry mechanism having a stationary base member, a rotating base member and Z-axis, and with an x-ray tube and detector plate positioned on said rotating base member, the method comprising the steps of:
providing a first plurality of individual weight members and spacers at a first pre-selected location on said rotating base member;
providing a second plurality of individual weight members and spacers at a second pre-selected location on said rotating base members,
positioning trial weights on said rotating base member;

conducting a first baseline run, measuring the imbalance of the system and calculating the imbalance magnitudes and phase angles;

conducting two additional trial runs with trial weights positioned at prespecified locations on said rotating base member;

calculating the mass and Z-axis location of the mass necessary to statically and dynamically balance said mechanism; and

positioning the first and second plurality of weight members and spacers in order to meet said calculations.

[c9] 9. The method as described in claim 8 wherein said spacers comprise individual spacer members and shim members.

[c10] 10. The method as described in claim 8 wherein said individual weight members comprise a first set of weight members having a first mass and a second set of weight members having a second mass different from said first mass.

[c11] 11. The method as described in claim 8 wherein said pre-selected locations of said first and second plurality of weight members and spacer members are approximately 90°apart.

[c12] 12. A method as described in claim 8 wherein said pre-selected location of said first and second plurality of weight members and spacer members are at the 107°and 108°locations on said rotating base member.

[c13] 13. A method as described in claim 8 wherein said calculating the mass and Z-axis are carried out with a processor.

[c14] 14. A method as described in claim 8 further comprising the step of adjusting said positioning said first and second plurality of weight members and spacers in order to finalize the balancing.

[c15] 15. The method as described in claim 8 further comprising the step of conducting a test to check the performance of the balancing.

[c16] 16. The method as described in claim 8 wherein said measuring the imbalance of the system is conducted by at least a pair of strain gage member.